Glenn Thompson <thompsong@mail.usf.edu>

[obspy-users] overlay plotting or traces

Tobias Megies <megies@geophysik.uni-muenchen.de> Fri, Mar 14, 2014 at 9:53 AM
Reply-To: users@obspy.org
To: users@obspy.org

Yes, for all custom plotting needs beyond a simple preview, directly using matplotlib is the way to go.

Of course you should consider the possibility of differing start times of the traces.. simply starting at 0 for each one might not plot correctly aligned. also, always taking the sampling rate of the first trace is not failsafe.

To ensure all traces have the same start time you could trim with filling masked values.. e.g.:

st.trim(starttime=t0, pad=True, fill_value=None)

Furthermore, there's a convenience routine to get relative sample times in a Trace, so you could do something like:

Here's an example with a modified stream with differing sampling rates and starttimes to show what I mean:

```
##############
from obspy import read
import matplotlib.pyplot as plt

# put together modified example stream
st = read()
for i, tr in enumerate(st):
    tr.trim(starttime=tr.stats.starttime + 2 * i)
st[1].resample(200, no_filter=True)

# plot correctly
t0 = min([tr.stats.starttime for tr in st])
st.trim(starttime=t0, pad=True, fill_value=None)

for tr, color in zip(st, ["black", "red", "blue"]):
    times = tr.times()
    plt.plot(times, tr.data, linestyle="-", marker=None,
             color=color, linewidth=1.5, label=tr.id)

plt.grid()
plt.legend()
plt.show()
##############
```

Or you could also simply use matplotlib's timestamp oriented plotting and use absolute times of samples to plot, which always plots x axis

correctly no matter what start times / sampling rates etc... e.g.:

```
##############
from obspy import read
import matplotlib.pyplot as plt

# put together modified example stream
st = read()
for i, tr in enumerate(st):
    tr.trim(starttime=tr.stats.starttime + 2 * i)
st[1].resample(200, no_filter=True)

# plot correctly
for tr, color in zip(st, ["black", "red", "blue"]):
    # get absolute time stamps for every sample
    times = [(tr.stats.starttime + t).datetime for t in tr.times()]
    plt.plot_date(times, tr.data, linestyle="-", marker=None,
                  color=color, linewidth=1.5, label=tr.id)

plt.grid()
plt.legend()
plt.show()
##############
```

best,
Tobias

[Quoted text hidden]

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